Vita
Donald H. House
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Professor Emeritus
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Education

- Ph.D. 1984, University of Massachusetts (Computer and Information Sciences)
- M.S. 1978, Rensselaer Polytechnic Institute (Electrical Engineering)
- B.S. 1969, Union College (Mathematics)

Academic Experience

- Senior Professor, Department of Visualization, Texas A&M University, 2021-present
- Professor Emeritus, Clemson University, 2017 to present
- Interim Director, Digital Production Arts MFA Program, Clemson University, 2013-2014
- Professor and Chair, Division of Visual Computing, School of Computing, Clemson University, 2008 - 2017
- Professor Emeritus, Texas A&M University, 2009 to present
- Professor, Department of Visualization, Texas A&M University, 2008
- Associate Head for Research, Department of Architecture, Texas A&M University, 2006-2008
- Professor, Department of Architecture, Texas A&M University, 1999-2008
- Coordinator, Master of Science in Visualization Sciences, Texas A&M University, 1993-2003
- Associate Professor, Department of Architecture, Texas A&M University, 1993-1999
- Associate Professor - Computer Science Department, Williams College, 1990-1993
- Assistant Professor - Computer Science Department, Williams College, 1984-1990
- Visiting Lecturer - Mathematical Sciences Department, Smith College, 1981-1982 and Spring 1984
- Lecturer - Mathematical Sciences Dept., University of North Carolina at Wilmington, 1978-1980

Visiting Positions

- Visiting Scholar - Department of Computer Science and Engineering, Texas A&M University, academic year 2014-2015.
- Visiting Scientist - Center for Coastal and Ocean Mapping/Visualization Laboratory, University of New Hampshire, summers 2003-2005.
- Visiting Scientist - Department of Computer Science and Center for Coastal and Ocean Mapping/ Visualization Laboratory, University of New Hampshire, 2000-2001
- Visiting Professor - Department of Architecture and Visualization Laboratory, Texas A&M University, 1992-1993
- Part Time Visiting Scientist - Design Research Center, Rensselaer Polytechnic Institute, 1986-1992

Industrial Experience

- General Electric Company, Wilmington, NC, Software Engineer, 1976-1978
- Independent process control software contractor, Schenectady, NY, 1975-1976
- General Electric Company, Schenectady, NY,
  - Simulation Software Engineer for power systems analysis group, 1974-1975
  - Instructor and administrator for GE/RPI Advanced Course for Engineers, 1973-1974
  - Programmer/Lead Programmer for real-time large-scale industrial automation projects. Design and development of software tools for GE process-computers, 1968-1973

Professional Societies

- Association for Computing Machinery
- SIGGRAPH
- IEEE Computer Society

Academic and Professional Honors

- Outstanding Alumni Award for Achievement in Education, School of Computer Science, University of Massachusetts, Amherst, 2014
- Faculty Fellow, Center for Hazards Reduction and Recovery, Texas A&M University, 2009 – present
- Founding Chair, Division of Visual Computing, School of Computing, Clemson University, 2008
- Founding Member, Department of Visualization, Texas A&M University, 2008
- Paper of the Year, International Journal of Clothing Science and Technology, 1996
- Founding Member, Department of Computer Science, Williams College, 1988
- Class of 1941 Fellow - Williams College, 1986-1987
- University Fellow - University of Massachusetts, 1982-1983
- Departmental Fellow - COINS Department, University of Massachusetts, summer 1982
- Honorary Member Phi Eta Sigma Freshman Honor Society - University of North Carolina at Wilmington, 1979, recognition for excellence in teaching.

Teaching

I am currently leading the teaching of a new three semester introductory sequence of courses in Visual Computing. These courses integrate fundamental principles from computer science and mathematics, as well as introducing approaches to scripting in commercial 3D packages.

At Texas A&M, and later Clemson, I designed and taught graduate and undergraduate courses in *Physically Based Animation*, *Computer Graphics*, and *Computer Graphics Images*, as well as collaborating on the design and teaching of a two-semester *Technical Foundations* course sequence. The *Technical Foundations* sequence is a comprehensive introduction to graphics programming, mathematics for graphics and interactive techniques designed to prepare graduate students with non-Computer Science backgrounds for additional study in programming and graphics. *Computer Graphics Images* covers a broad spectrum of topics having to do with generating, storing, compositing, warping and morphing digital images. *Physically Based Animation* treats the integration of physical simulation with visualization methods to produce realistic motion sequences for both animation choreography and real-time interaction. I approach the teaching of *Computer Graphics* using ray tracing as the foundation, working towards image space methods towards the end of the course. At Texas A&M University, I also developed a course in *Visualization*, covering the use of computer graphics in the presentation of scientific data and aimed at graduate students across the University interested in using visualization in their research areas.

At Williams College, I was heavily involved in curriculum development, particularly the introductory programming sequence, computer organization, AI and graphics. In graphics, I developed two new courses. The first was an upper division course for majors, focusing on three-dimensional shaded graphics. The second course, *The Art and Science of Computer Graphics*, was aimed at an audience of non-majors, and involved the design and development of a teaching tool integrating both programming and 3D graphics.

Workshops, Courses, and Panels

- Workshop Speaker, *Visualization for Decision Making Under Uncertainty*, IEEE Visualization 2015
- Participant*, Computing Community Consortium Workshop on Quantification, Communication, and Interpretation of Uncertainty in Simulation and Data Science*, October 15-16, 2014
- Panel Organizer, *Design and Evaluation in Visualization Research*, IEEE Visualization 2005.
- Course Organizer, *Cloth and Clothing in Computer Graphics*, SIGGRAPH 98, Course No. 31.
- Course Organizer, *Particle System Modeling, Animation, and Physically Based Techniques*, SIGGRAPH 92, Course No. 16.

Ph.D. Committee Chairmanships

- Le Liu (chair), Computer Science, Clemson University, *Effective Visualizations of the Uncertainty in Hurricane Forecasts*, 2017.
- Meng Zhu (chair), Computer Science, Clemson University, *Surface Shape Perception in Volumetric Stereo Displays*, 2013.
- Cem Yuksel (cochair), Computer Science, Texas A&M University, *Wave Particles*, 2010.
- Alethea Bair (chair), Architecture, Texas A&M University, *Optimization of Single and Layered Surface Rendering*, 2009.
- Woo-Suck Hong (cochair), Computer Science, Texas A&M University, *An Adaptive Sampling Approach to Incompressible Particle-Based Fluid*, 2009.
- Scott Arvin (chair), Architecture, Texas A&M University, *Physically Based Space Planning*, 2003.
- Greg Schmidt (cochair), Computer Science, Texas A&M University, *Model Based Gesture Recognition,* 2000.
- Sandra Sudarsky (cochair), Computer Science, Texas A&M University, *Motion Data Manipulation and Reuse via B-Splines*, 1999.
- Aladin Ibrahim (chair), Architecture, Texas A&M University, *Genetic Shaders: Automatic and Interactive Shader Generation*, 1998.
- David Breen (cochair), Computer and Systems Engineering, Rensselaer Polytechnic Institute, *A Particle-Based Model for Simulating the Draping Behavior of Woven Cloth*, 1993.

M.F.A. in Digital Production Arts Committee Chairmanships, Clemson University

- Junyan Wang, *An Approach to the Procedural Generation of Worn Metal Surfaces*, 2016.
- Jordan Gestring, *Intercept: Crafting a Live-Action VFX Short Film with Limited Resources*, 2016.
- Ashley Anderson, *Procedural Scratch Generation for Rigid-Body Models*, 2014.
- Amanda Morland, *Real-Time Motion Capture and Particle System Simulation on the GPU*, 2014.
- Daniel McCoy, *Long-Term Multi-Dimensional Interactive Time-Lapse Photography using Microsoft Kinect, 2014.*
- Anuradha Pinisetty, *Recreating and Simulating Digital Costumes from a Stage Production of Medea, 2013.*
- Zacharia Inks, *Teaching Methods for a Holistic Computer Graphics Curriculum Incorporating Active Learning Techniques, 2013.*
- Ryan Cushman, "*Mr. Potato Rig,*" *Modular Rigging in Blender*, 2010.
- Stephen Cooney, *Parallel Root 3-Subdivision with Animation in Consideration of Geometric Complexity*, 2010.
- Chen Sun, *Simulation of the Mixing of Ink and Water in Houdini*, 2010.
- Celambarasan Ramasamy, *The Design, Production and Analysis of a Realistic Stereo CG Short Film on a Six Month Budget*, Clemson University, 2009.

M.S. in Visualization Sciences Committee Chairmanships, Texas A&M University

- Kurt Phillips, *Tearable Cloth*, 2009.
- Christopher Root, *Stylistic Control of Ocean Wave Simulations*, 2009.
- Michael Losure, *A Non-Photorealistic Model for Procedural Painterly Rendered Trees in the Style of Corot*, 2008.
- Patrick O'Brien, *Lattice Boltzman Based Watercolor Painting Simulation*, 2008.
- Rebecca Flannery, *Particle-Based Adaptive Level-of-Detail Fluid Simulation*, 2008.
- Alex Timchenko, *A Physically Based Modeling Engine for Multi-Computer Immersive Display*, 2007.
- Can Yuksel, *Real-time Rigid Body Simulation*, 2007
- Brian Barran, *View Dependent Fluid Simulation*, 2006.
- Sung-Hwa Lee, *Automated Gait Generation Based on Traditional Animation*, 2005
- Jessica Scott, *GPU Programming for Real-Time Watercolor Simulation*, 2005
- John Halstead, *Crayola Rendering*, 2005
- Matthew Roach, *Physically Based Simulation of Explosions*, 2005
- Sarah Fowler, *Computer Graphics Techniques for Planetarium Show Production*, 2005.

- Luke Carnevale, *Low Cost, Quality Character Animation for Planetarium Show Production*, 2005.
- Shannon Greenwood, *Bubbles and Foam in Fluid Simulations*, 2004.
- Charu Sharma, *Expressive Interpretation of Indian Dance*, 2004.
- Robert Moyer, *A Wood Burl Shader*, 2003.
- Jean Michael Mistrot, *Particle Staining*, 2003.
- Jeff David Groves, *Video Modeling: Spatio-Temporal Warping*, 2003.
- Barbara Lynn Ellison, *Costume Construction for Digital Characters*, 2002 .
- Thomas Moore, *Reconstruction of PSA B-727-214 and C-172M Accident of September 25, 1978: San Diego, California, Using Computer Simulation and Visualization*, 2000.
- Maria Pia Miniati, *A Physically Based Approach to Modeling and Animating a Sailboat*, 1999.
- Tonya Abna, *Loose and Sketchy Rendering*, 1999.
- Kevin Reuter, *Fractal Generation of Textures and Backgrounds*, 1999.
- Sunil Segu, *Towards Believable Cloth Motion in Computer Animation*, 1999.
- Manuel Calderon, *Avoiding Character Collisions in Games*, 1998.
- Everett Hinkley, *Toon Physics and the Automation of Cartoon Like Animation*, 1998.
- Christopher Kocmoud, *Constructing Continuous Cartograms: A Constraint Based Approach*, 1997.
- Michael Ringham, *Physically-Based Aerodynamic Flight of Birds: An Interactive Approach to Behavioral Flocking*, 1996.
- David Hisanaga, *Conversion of Digital Images to the Look of Motion Picture Film*, 1996.
- Umakanth Thumrugoti, *Interactive Modeler for Cloth Draping*, 1994.
- Evelyn Wells (cochair), *A Comparison of Interactive Color Specification Systems for Human-Computer Interfaces*, 1994.

B.S. in Computer Science, Undergraduate Honors Thesis Supervision, Williams College

- Brad Cohen, *Techniques for Extraction of Three-Dimensional Objects from Serial Cross-Sectional Data*, 1992.
- Joshua Smith, *Evolving Dynamical Systems with the Genetic Algorithm*, 1991.
- Seth Rogers, *Nonphotorealistic Rendering: Image Processing Using G-Buffers*, 1991.
- Charles Moylan, *From Two-Dimensional Images to Three-Dimensional Models*, 1990.
- Christopher Colapietro, *Solving the Hidden Surface and Shadowing Problems for Polygonal Models with Binary Space Partitioning Trees*, 1990.
- James Bowlby, *Reconstruction of 3-Dimensional Objects from Cross-Sectional Data*, 1988.

Research

My current research efforts are focused around perceptual issues in visualization, with projects in the visualization of uncertainty in data and predictions, texturing surfaces in volumetric rendering to enhance shape perception, and eye tracking in stereo display environments.

My doctoral research was in computational neuroscience, investigating neural-computational mechanisms underlying depth perception and visuo-motor coordination in anuran amphibians (frogs and toads).

Books

D. House, J. Keyser, Foundations of Physically Based Modeling and Animation, A K Peters/CRC, an imprint of Taylor & Francis Group, Boca Raton, FL, 2016.

D. House, D. Breen (Eds.), *Cloth and Clothing in Computer Graphics*, A K Peters, Ltd., Natick, MA, 2000.

A. B. Tucker (Ed.), *CRC Handbook of Computer Science and Engineering*, Section Advisor for nine chapter, 200 page section on Computer Graphics, CRC Press, 1997.

Depth Perception in Frogs and Toads – A Study in Neural Computing, Springer-Verlag, Lecture Notes in Biomathematics Series, vol. 80, New York, 1989.

Peer Reviewed Publications

L. Liu, L. M. Padilla, S. H. Creem-Regehr, and D. H. House, Visualizing uncertain tropical cyclone

predictions using representative samples from ensembles of forecast tracks, *IEEE Transactions on Visualization and Computer Graphics (Proceedings of IEEE Visualization 2018),* 25(1), pp. 882-891, 2018.

M. K. Lindell, D. H. House, J. Gestring, and H-C. Wu, A tutorial on DynaSearch: A Web-based system for collecting process tracing data on dynamic decision tasks, *Behavioral Research Methods*, 2018. https://doi.org/10.3758/s13428-018-1119-3

L. Liu, A. P. Boone, I. T. Ruginski, L. M. Padilla, M. Hegarty, S. H. Creem-Regehr, W. B. Thompson, C. Yuksel, and D. H. House, Uncertainty visualization by representative sampling from prediction ensembles, *IEEE Transactions on Visualization and Computer Graphics*, 23(9), pp. 2165-2178, 2017.

Ergun Akleman, and Donald House, Barycentric Shaders: Art Directed Rendering and Shading Using Control Image, *Proceedings of Expressive 2016,* pp. 39-49, 2016.

I. T. Ruginski, A. P. Boone, L. M. Padilla, N. Heydari, H. S. Kramer, M. Hegarty, W. B. Thompson, D. H. House, and S. H. Creem-Regehr. Non-expert interpretations of hurricane forecast uncertainty visualizations. *Spatial Cognition and Computation*, 16(2), pp. 154–172, 2016.

Ergun Akleman, Siran Liu, and Donald House. Art directed rendering & shading using control images. In *SIGGRAPH 2015: Studio* (SIGGRAPH '15). ACM, New York, NY, USA, Article 10, 1 page, 2015.

Le Liu, Mahsa Mirzargar, Robert M. Kirby, Ross Whitaker, Donald House, Visualizing Time-Specific Hurricane Predictions, with Uncertainty, from Storm Path Ensembles, *Computer Graphics Forum* (Proceedings of EuroVis 2015), Volume 34, Issue 3, pages 371–380, 2015.

Duchowski, A. T., House, D. H., Gestring, J., Wang, R. I., Krejtz, K., Krejtz, I., Mantiuk, R., and Bazyluk, B., Reducing Visual Discomfort of 3D Stereoscopic Displays with Gaze-Contingent Depth-Of-Field, in *Symposium on Applied Perception* (SAP) August 8-9, 2014.

Duchowski, A. T., House, D. H., Gestring, J., Congdon, R., Świrski, L., Dodgson, N. A., Krejtz K., Krejtz, I., Comparing Estimated Gaze Depth in Virtual and Physical Environments, in *Eye Tracking Research & Applications* (ETRA), March 26-28, 2014.

Wang, R. I., Pelfrey, B., Duchowski, A. T., and House, D. H., Online 3D Gaze Localization on Stereoscopic Displays, *Transactions on Applied Perception*, 11(1), 2014.

D. House, J. Cox, and M. K. Lindell, Visualizing uncertainty in predicted hurricane tracks, *International Journal for Uncertainty Quantification*, vol 3, no. 2, pp. 143-156, 2013.

Wang, R. I., Pelfrey, B., Duchowski, A. T., and House, D. H., Online Gaze Disparity via Binocular Eye Tracking on Stereoscopic Displays, in *Proceedings of the Second Joint 3DIM/3DPVT Conference: 3D Imaging, Modeling, Processing, Visualization & Transmission* (3DimPVT 2012), October 13-15, 2012, Zurich, Switzerland, IEEE.

Meng Zhu, Mark Carlson, Donald House, Ray Casting Sparse Level Sets, *DigiPro 2012 Conference Proceedings*, August 4, 2012, Los Angeles.

Duchowski, A. T., Pelfrey, B., House, D. H., and Wang, R., Eye-Tracked Vergence Response During Active-Stereo Display, in the Hamlyn Symposium on Medical Robotics, July 1-2, 2012, London, UK.

A. Bangalore and D. House, A Technique for Art Direction of Physically Based Fire Simulation, Proceedings of Computational Aesthetics 2012, June 4-6, 2012, Annecy, France.

Andrew T. Duchowski, Brandon Pelfrey, Donald H. House, Rui Wang, Measuring Gaze Depth with an Eye Tracker During Stereoscopic Display, *Proceedings of the Symposium on Applied Perception in Graphics and Visualization*, pp. 15-22, 2011.

T. A. Davis and D. H. House, The Art and Science of Digital Production Arts, *Eurographics 2011 – Education Papers*, Llandudno, UK, pp. 17-22, 2011.

C. Yuksel, J. Keyser, and D. House, Mesh Colors*, ACM Transactions on Graphics (Presented at SIGGRAPH 2010)*, 29(2), Article 15, 2010.

D. House, B. Malloy and C. Buckley, The Craft of Computer Programming: Lifting the Veil, *Proceedings of Future Play 2010*, pp. 98-105, 2010.

B. Daugherty, A. Duchowski, D. House, C. Ramasamy, Measuring Vergence Over Stereoscopic Video with a Remote Eye Tracker, *Proceedings of the 2010 Symposium on Eye-Tracking Research & Applications*, pp. 97-100, 2010.

M. Singh, C. Yuksel, D. House, Fast Occlusion Sweeping, *Advances in Visual Computing (Proceedings of International Symposium on Visual Computing 2009)*, *Lecture Notes in Computer Science*, Springer, vol. 5875, pp. 167-178, 2009.

A. Bair, D. House, C. Ware, Factors influencing the choice of projection textures for displaying layered surfaces, *Proceedings of Applied Perception in Graphics and Visualization 2009*, pp. 101-108, 2009.

C. Ramasamy, D. House, A. Duchowski, B. Daugherty, Using eye tracking to analyze stereoscopic filmmaking, *SIGGRAPH 2009: Posters*, Article No. 28, 2009.

W. Hong, D. House and J. Keyser, Adaptive Particles for Incompressible Fluid Simulation, *The Visual Computer (Proceedings of Computer Graphics International 2008)*, 24(7-9), pp. 535-543, 2008.

M. Singh and D. House, Line Drawing as a Dynamic Process, *Proceedings of Pacific Graphics 2007*, pp. 351-360, 2007.

C. Yuksel, D. House and J. Keyser, Wave Particles, *ACM Transactions on Graphics (Proceedings of SIGGRAPH 2007)*, 26(3), article 99, 2007.

J. Stoddard, R.D. Bergeron and D. House, Tangent Driven Interpolative Subdivision, *Computers and Graphics*, 31(5), pp. 737-749, 2007.

A. Bair and D. House. Grid With a View: Optimal Texturing for Perception of Layered Surface Shape, *IEEE Transactions on Visualization and Computer Graphics (Proceedings of Visualization 2007)*, pp. 1656-1663, Nov. 2007.

A. Bair, D. House and C. Ware. Texturing of Layered Surfaces for Optimal Viewing, *IEEE Transactions on Visualization and Computer Graphics (Proceedings of Visualization 2006)*, pp. 1125-1132, Sept. 2006.

D. House, A. Bair and C. Ware. An Approach to the Perceptual Optimization of Complex Visualizations, *IEEE Transactions on Visualization and Computer Graphics*, July 2006, pp. 509-521.

D. House, A. Bair and C. Ware. On the Optimization of Visualizations of Complex Phenomena, *Proceedings of IEEE Visualization 2005*, pp. 87-94, 2005.

A. Bair, D. House and C. Ware. Perceptually Optimizing Textures for Layered Surfaces, *Proceedings of Applied Perception in Graphics and Visualization 2005*, pp. 67-74, 2005.

S. Greenwood and D. House. Better with Bubbles: Enhancing the Visual Realism of Simulated Fluid, *Proceedings of Symposium on Computer Animation 2004*, pp. 287-296, 2004.

G. Schmidt, D. House. Model Based Motion Filtering for Improving Arm Gesture Recognition Performance, *Gesture-Based Communication in Human-Computer Interaction, Proceedings of 5th International Gesture Workshop* (Springer Lecture Notes), (Genoa, Italy), 210-230, 2003.

G. Greenfield, D. House. Image Recoloring Induced by Palette Color Associations, *Journal of WSCG*, Vol. 11, No. 1, 189-196 (2003)

D. House, C. Ware. A Method for the Perceptual Optimization of Complex Visualizations, *Proceedings of Advanced Visual Interface 2002*, (Trento, Italy, May 22-24, 2002), pp. 148-155, 2002.

G. Schmidt, D. House, Towards Model-Based Gesture Recognition*, Automatic Face and Gesture Recognition 2000*, (Grenoble, France), pp. 416-421, 2000.

S. Sudarsky, D. House, An Integrated Approach Towards Representation, Manipulation and Reuse of Pre-Recorded Motion, *Computer Animation 2000*, (Philadelphia, Pennsylvania), pp. 56-61, 2000.

G. Schmidt, D. House, Guided Motion Synthesis, *Proceedings of Visual 2000*, (Mexico City, Mexico) (2000)

S. Arvin, D. House, Modeling Architectural Design Objectives in Physically Based Space Planning, *Automation in Construction*, (2000)

S. Arvin, D. House. Modeling Architectural Design Objectives in Physically Based Space Planning.

Media and Design Process, O. Ataman, J. Bermudez (Eds.), Proceedings of ACADIA 99, (Salt Lake City, Utah, October 28-31, 1999) 212-225 (1999)

S. Arvin, D. House, Making Designs Come Alive: Using Physically Based Modeling Techniques in Space Layout Planning, *Computers in Building: Proceedings of the CAADfutures 99 Conference*, G. Augenbroe, C. Eastman (Eds.), (Atlanta, Georgia, June, 7-8, 1999) 245-262 (1999)

S. Sudarsky, D. House, Motion Capture Data Manipulation and Reuse via B-Splines, *Modeling and Motion Capture Techniques for Virtual Environments*, N. Magnenat-Thalmann, D. Thalmann (Eds.), Proceedings of CAPTECH 98, (Geneva, Switzerland, November 26-27, 1998), 55-69 (1998)

D. House, C. Kocmoud, Continuous Cartogram Construction, *Proceedings of Vis 98* IEEE Visualization 1998, (Research Triangle Park, North Carolina, October 18-23, 1998), 197-204 (1998)

C. Kocmoud, D. House, A Constraint-Based Approach to Constructing Continuous Cartograms, *Proceedings of 8th International Symposium on Spatial Data Handling* (Vancouver, July 11-15, 1998), (1998)

D. House, G. Schmidt, S. Arvin, M. Kitagawa-DeLeon, Visualizing a Real Forest, *IEEE Computer Graphics and Applications*, vol. 18, no. 1, 12-15 (1998)

G. Schmidt, M. Ringham, D. House, *Choreographing Realistic Animated Birds Using Gesture Recognition*, *Proceedings of VRAIS 98* IEEE Virtual Reality Annual International Symposium (Atlanta, Georgia, March 14-18, 1998), poster paper, 211 (1998)

M. Ringham, D. House, Aerodynamic Bird Flight: A Physically-Based Approach to Behavioral Flocking, *Proceedings of CAD & Graphics '97* Fifth International Conference on CAD & CG (Shenzhen, China, December 2-5, 1997), Vol. 1, 69-74 (1997)

D. House, G. Schmidt, S. Arvin, M. Kitagawa-DeLeon, A Realistic Animated Walkthrough of an Existing Forest, *Proceedings of Data Visualization 97* (St. Louis, Missouri, October 8-10, 1997) on-line WWW document, 1997.

A. Ibrahim, D. House, Genetic Shaders: Interactive and Automatic Shader Generation, *Visual Proceedings SIGGRAPH 97* Sketches (Los Angeles, California, August 3-8, 1997) pg. 189 (1997)

D. House, S. Arvin, G. Schmidt, M. Kitagawa-DeLeon, Visualizing the Midway Face of the Dixie National Forest, *Visual Proceedings SIGGRAPH 97* Sketches (Los Angeles, California, August 3-8, 1997) pg. 207 (1997)

D. House, R. DeVaul, D. Breen, Towards simulating cloth dynamics using interacting particles, *International Journal of Clothing Science and Technology* , vol. 8, no. 3, 75-94 (1996). IJCST 1996 Paper of the Year.

D. Breen, D. House, M. Wozny, A particle-based model for simulating the draping behavior of woven cloth, *Textile Research Journal*, vol. 64, no. 11, 663-685 (1994)

D. Breen, D. House, M. Wozny, Predicting the drape of woven cloth using interacting particles, *Proceedings of SIGGRAPH 94* (Orlando, Florida, July 24-29, 1994). In Computer Graphics Proceedings, Annual Conference Series, ACM SIGGRAPH, 365-372 (1994)

D. House, D. Levine, The Art and Science of Computer Graphics: a very depth-first approach to the non-majors course, *Proceedings of SIGCSE 94* (Phoenix, Arizona, March 10-11, 1994). In SIGCSE Bulletin, ACM SIGCSE, 334-338 (1994)

J. Smith, D. House, Evolving models of dynamical systems with a genetic algorithm, *Proceedings of IEE Colloquium on Genetic Algorithms for Control and Systems Engineering* (London 1992). IEE Digest 1992/106.

D.Breen, D. House, P.Getto, A physically-based particle model of woven cloth, *The Visual Computer*, vol. 8, no. 5-6, 264-267 (1992)

D.Breen, D. House, P.Getto, A particle-based computational model of cloth draping behavior, in *Scientific Visualization of Physical Phenomena* , N.M. Patrikalakis (Ed.), Springer-Verlag, Tokyo, 1991.

D.Breen, D. House, Particles: a naturally parallel approach to modeling, *Proceedings of the 3rd*

Symposium on the Frontiers of Massively Parallel Computation, 1991.

D. House, D.Breen, Particles as modeling primitives for surgical simulation, *Proceedings of the 11th Annual International Conference of the IEEE Engineering in Medicine & Biology Society*, 1989.

A parallel algorithm for object localization within the binocular visual field, *Parallel Processing for Computer Vision and Display*, P.M.Dew, R.A.Earnshaw & T.R.Heywood (Eds.), Addison-Wesley, Wokingham, 1989.

A model of the visual localization of prey by frog and toad, *Biological Cybernetics*, 58, 173-192 (1988)

M.A. Arbib, D. House, Depth and detours: An essay on visually guided behavior, in *Vision, Brain and Cooperative Computation*, M. Arbib & A. Hanson (Eds.), MIT Press, Cambridge, Massachusetts, 1987.

D. House, M.A. Arbib, Depth and detours: Decision making in parallel systems, *Proceedings of the 1985 IEEE Workshop on Languages for Automation: Cognitive Aspects in Information Processing*, 1985.

Neural Models of Depth Perception in Frogs and Toads, Ph.D. Dissertation, University of Massachusetts, 1984.

Invited Papers

D. House, R. DeVaul, Cloth and Clothing in Computer Graphics, *Course Notes, SIGGRAPH 98 Course 31*, 1998.

D. House, D. Breen, Representation of Woven Fabrics, *Course Notes, SIGGRAPH 98 Course 31*, 1998.

D. House, G. Schmidt, S. Arvin, M. Kitagawa-DeLeon, Visualizing a Real Forest, *Computer Graphics and Applications, Visualization Blackboard*, vol. 18, no. 1, 12-15 (1998)

Overview of Three-Dimensional Computer Graphics, in A. B. Tucker (Ed.), *The Computer Science and Engineering Handbook*, pp. 1193 - 1210, CRC Press, 1997.

Overview of Three-Dimensional Computer Graphics, *Computing Surveys*, vol. 28, no. 1 (1996)

External Grants and Awards

CGV: Large: Collaborative Research: Modeling, Display, and Understanding Uncertainty in Simulations for Policy Decision Making (PI Donald House) $321,953 for a 4 year project aimed at improving visualization of uncertain data and predictions being used for making policy or response decisions with respect to environmental management or natural hazards.

Project Green, (PI Joachim Taiber) $50,000 for an industry funded project to develop a former air base in Greenville, South Carolina into a test track for green vehicles. Our role is to develop an interactive simulation of the developing track and building designs, to assist designers and for project promotion.

NSF, 2010-2012, *TIGER - Tight Integration of Grid Enabled Researchers*, (PI James Bottum) $207,930 for a 2-year project to enhance interaction of CCIT and academic researchers both within Clemson and across regional universities. The project is especially aimed at enhancing collaboration with minority serving institutions.

NSF HCC: Small, 2009-2011, *Eye Movement in Stereoscopic Displays, Implications for Visualization*, (PI Andrew Duchowski) $498,562 for a 3 year project looking at the use of eye tracking for analyzing strategies used to undertake visual tasks in stereoscopic volumetric visualizations, and investigating the use of eye tracking to optimize the display based on the 3D gaze point. To our knowledge, this is the first such project to use eye tracking in this way.

NSF/NOAA CHI, 2009-2011, *Communicating Hurricane Information to Local Officials for Protective Action Decision Making*, PI on $165,041 Clemson University portion of a 3 year $400,000 project. This is a collaboration with PI Michael Lindell of Texas A&M University. We will be exploring cognitive aspects in the use of computer displays to communicate hurricane information, and developing new approaches to visualizing both the predictions and the uncertainty of hurricane forecasts.

NSF CCLI Phase I, 2006-2008, *Multiple Models for Civil Engineering Dynamics*, Co-PI (PI James Morgan, Civil Engineering, Texas A&M) on $125,000 project. This is the first phase of a project to develop aids for the teaching of Civil Engineering Dynamics. The role of my group is to develop software that will support the interactive building and simulation of the types of dynamic models used in the Civil Engineering Department's introductory dynamics course.

NSF MRI, 2005-2008, *Development of Spatially Immersive Visualization Facilities*, Co-PI (PI Frederic Parke, Texas A&M) on $500,000 project. Parke has designed and developed a model for immersive visualization based on the use of consumer hardware, and multiple tiled quadrilateral displays. This project is to build two working versions of this system architecture for use in research. My role is in directing the development of software for physically based simulation that will be integrated into the immersive facility.

NSF Medium ITR, 2003-2005, *Perceptual Optimization of Data Visualization*, PI on $392,549 Texas A&M portion of a 3 year nearly $1,000,000 project. This is a multi-university collaboration with PI's Colin Ware of the University of New Hampshire, David Laidlaw of Brown University. My responsibility is the development of "human in the loop" algorithms for exploring spaces of visualizations with the goal of beginning to elaborate an "information psychophysics".

NSF Educational, 2002-2005 *Enlightening Lightning! Coupling Earth Systems Research to K-12 Education using Planetarium Presentations*. $181,840 project, Co-PI with Richard Orville of Meterology, Texas A&M and Michael Hibbs, Tarleton State University to develop a planetarium show on lightning for national distribution, aimed at middle school aged children. Responsible for all aspects of the production of show content, including video, character animation and animated full-dome illustrations.

USDA Forest Service, 1993-1995. *Human Response-based Evaluation of Environmental Data Visualization Systems*. $30,000 subcontract from University of Arizona to produce a highly realistic forest walk animation using geographic and tree data from the Dixie National Forest in Utah. The project goal is to quantify the efficacy of computer visualizations in eliciting human responses comparable to those attained with video and actual experience.

NECUSE (New England Consortium for Undergraduate Science Education), received jointly with Andries van Dam of Brown University and Allen Tucker of Bowdoin College. $20,000 project to further the development of an object-oriented graphics system for the teaching of both a non-majors course in graphics, and a course for computer science majors.

Defense Logistics Agency, 1990. Grant to Rensselaer, in excess of $500,000 to develop technology for the automation of pressing in clothing manufacture. Co-PI on modeling component of project with budget of $110,000. Charged with responsibility to develop a physically-based dynamic model of cloth. SIGGRAPH Educator's Grant, 1990 award for teaching of computer graphics, included admission to conference and courses, and various conference materials.

National Science Foundation. 1989-1991. $57,638 ILI Program award for equipping a laboratory for undergraduate computer science instruction.

National Science Foundation. 1987-1988, 1988-1989. Two $30,000 RUI Program awards for studies of particle system simulation models of biological tissues.

Medical Simulation Foundation, Inc. 1987-1988. $50,000 award, through Rensselaer's Design Research Center Industrial Associates Program, for studies leading to the development of a surgical simulation model of the human knee.

Conferences and Invited Talks

Model Based Motion Filtering for Improving Arm Gesture Recognition Performance, Gesture Workshop

2003, Genoa, Italy, April 2003.

Guided Motion Synthesis, Visual 2000, Mexico City, Mexico, 2000.

Automatic Construction of Continuous Cartogram Map Deformations, Universidad de Las Américas - Puebla, México, May 1999.

Continuous Cartogram Construction, Wilhelm Schickard Institut für Informatik, Universität Tübingen, Tübingen, Germany, November 1999.

Continuous Cartogram Construction, IEEE Visualization 1998, Research Triangle Park, North Carolina, October 1998.

Representation of Woven Fabrics, SIGGRAPH 98, Course 31, Cloth and Clothing in Computer Graphics, Orlando, July 1998.

Aerodynamic Bird Flight: A Physically-Based Approach to Behavioral Flocking , State Key Lab for Computer Graphics, Hangzhou, China, December 1997.

Aerodynamic Bird Flight: A Physically-Based Approach to Behavioral Flocking , CAD & Graphics '97, Shenzhen, China, December 1997.

(presented jointly with D. Breen) *Predicting the drape of woven cloth using interacting particles*, SIGGRAPH 94, Orlando, July 1994.

The Art and Science of Computer Graphics: a very depth-first approach to the non-majors course, SIGCSE 94, Phoenix, Arizona, March 1994.

Visualization, Visualizers, and the Natural World, invited talk, Fourth Annual Conference on AI, Simulation, and Planning in High Autonomy Systems, Tucson, September 1993.

Coupled Particles: Theory, SIGGRAPH 92 Course 16, Particle System Modeling, Animation, and Physically Based Techniques, Chicago, July 1992.

A particle-based computational model of cloth draping behavior, 9th Annual International Conference of the Computer Graphics Society (CGI '91), Cambridge, Massachusetts, June 1991.

Computer Science for the Non-major: The Art and Science of Computer Graphics, Computing Strategies Across the Curriculum Conference, Burlington, Vermont, April 1991.

Computer Imaging, NERCOMP Conference on The Arts, Technology and Computers, New London, February, 1990.

Particles as Modeling Primitives for Surgical Simulation, 11th Annual International Conference of the IEEE Engineering in Medicine & Biology Society, Seattle, November 1989.

A Parallel Algorithm for Object Localization Within the Binocular Visual Field, International Conference on Parallel Processing for Computer Vision and Display, University of Leeds, Leeds, UK, January 1988.

Global Representations: Are They Needed for Sensory-Motor Integration? , invited talk, Woods Hole Workshop on Computational Neuroscience, Woods Hole Marine Biological Research Station, August 1985.

Depth and Detours: Decision Making in Parallel Systems, 1985 IEEE Workshop on Languages for Automation, Universitat de Palma, Palma de Mallorca, June 1985.

Depth and Detours: Towards Neural Models, Second Workshop on Visuomotor Coordination in Frog and Toad, Universidad Nacional Autonoma de Mexico, Mexico City, November 1982.

The Frog/Toad Depth Perception System - A Cooperative/Competitive Model , Workshop on Visuomotor Coordination in Frog and Toad, University of Massachusetts, Amherst, November 1981.

Service

As Senior Professor in the Department of Visualization at Texas A&M, my work has been in leading the effort for a complete redesign of the undergraduate BS Curriculum. This has included designing, and leading the teaching of a new three semester sequence of courses to prepare Visualization students in the programming and mathematical aspects of Visual Computing

Until May 15, 2017 I served as Chair of the Division of Visual Computing within the School of Computing at Clemson, responsible for the development of academic and research programs in all areas of computing related to image making and visual perception. There are currently six regular faculty members, one Professor of Practice, and three adjunct faculty members in the Division, and the Division is actively recruiting for three additional tenure-track positions. We operate three research labs, as well as a digital production studio. We offer an interdisciplinary program leading to an M.F.A. in Digital Production Arts, and an undergraduate minor in Digital Production Arts. We also support specializations in Visual Computing within the Computer Science Ph.D. and M.S. programs, with significant course offerings in Computer Graphics, Physically Based Animation and Visual Effects, Eye Tracking, and Electronic Game Development.

Prior to coming to Clemson, I was at Texas A&M University. Most recently I served for two years as Associate Head for Research in the Department of Architecture. Duties included administration of the three research degrees in the Department, the M.S. in Architecture, the M.S. in Visualization Sciences, and the Ph.D. in Architecture. I also advised the Department Head on research issues, coordinated with the College research centers, and served on the academic affairs committee. A special focus of my work in this position was to undertake an evaluation and restructuring of the Ph.D. program. From 1993 until 2003 I served as Academic Program Coordinator of the Master of Science in Visualization Sciences program. In this capacity I reported to the Head of the Department of Architecture, and worked directly with the Director of the Visualization Laboratory to oversee all academic programs within the Laboratory. My chief responsibilities included curriculum development and implementation, faculty recruiting and advising the Department Head on hiring, student recruiting and admissions, course scheduling and teaching assignments, and strategic planning.

The M.F.A. Program at Clemson and the M.S. Program at Texas A&M are unique, ground-breaking academic programs, dedicated to providing a broad-based multidisciplinary program in digital production. They are admired across the animation, visual effects, and game industries for the unusual skills and visual problem solving abilities of their graduates. Both programs admit students from a variety of disciplines, including computer science, engineering, art and design, and architecture. The curricula are designed to foster broad foundation knowledge in the art, science and technology of digital production, as well as expertise in a focus area. All graduates complete a research project and thesis.